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NYASALAND PROTECTORATE.

ANNUAL
MEDICAL AND SANITARY
REPORT

For the Year ending 31st December, 1941.

PRICE 4/-

1942:
Printed and Published by the Government Printer,
Zomba, Nyasaland.

—10271—

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I. PUBLIC HEALTH.

A. GENERAL REMARKS.

1. While Nyasaland remained free from the alarms of war, the activities of the Medical Department were not altogether unaffected. One Senior Medical Officer, six Medical Officers, and a number of African members of our staff remained on service with the Army.

2. The Medical Entomologist, Dr. W. A. S. Lamborn, O.B.E., who had been seconded to the Army in 1940, was released from military service in March when he returned to the country to take short leave and retire from Government service. He re-entered the service in December as a Temporary Medical Officer. Dr. J. O. Shircore, C.M.G., late Director of Medical Services, Tanganyika Territory, who had also been on service with the military, joined the Medical Department on 10th August, 1941, as a Temporary Medical Officer.

3. During the first three months of the year, the Church of Scotland and the Dutch Reformed Church Missions lent Medical Officers to Government. Later, the Church of Scotland Mission had to ask for Government help, which was given; firstly, by seconding a Government Officer for a time, and secondly, by arranging for help from the Dutch Reformed Church Mission. The Universities Mission to Central Africa closed down its general hospital at Kota Kota and permitted the nursing sister, who looked after that hospital, to give part time service at the District Government hospital. The Mission continues to maintain its maternity hospital.

4. Miss J. P. Spence arrived on transfer from Tanganyika Territory on the 15th of May and assumed duties as Matron of Nyasaland.

5. Owing to the incidence of leave, sickness, and retirements on marriage, it was found difficult to maintain our minimum nursing staff of European Sisters. The nursing service was maintained, however, with the assistance of volunteers from married ladies with nursing experience.

6. Leave to Great Britain has become, to the majority of officials, something to look forward to when the war is over. Officials now spend leave periods in South Africa, and appear to benefit from the change of climate. Medical Officers of the South African Government act as our Consultants and arrange for the medical and surgical care of officials advised to seek medical treatment whilst on leave. This arrangement has worked satisfactorily.

7. A committee of medical practitioners representing Government and Missions reviewed the list of drugs and medical supplies ordinarily maintained in this country. A list of the supplies considered essential for the needs of the country was prepared. In compiling this list the committee was guided by the recommendations of the Therapeutic Requirements Committee of the Medical

Research Council (Medical Research Council War Memorandum No. 3), and, in future, stocks of drugs and medical supplies ordered from abroad will be limited to those approved by this Committee. Government will be the main supplier of drugs and other medical requirements for all medical activities in the country. It is estimated that stocks maintained and ordered will be sufficient for all needs. Government has agreed to sell medical supplies to private concerns at cost plus a percentage to cover handling charges.

8. An Ordinance to make better Provision for the Control of the Profession of Pharmacy and the Trade in Drugs and Poisons received the approval of Legislative Council. Rules under this Ordinance will be published early in the new year. Legislative provision for the better control of the sale of poisons was long overdue. The new Ordinance follows the lines of similar legislation in force in adjacent territories.

9. His Excellency the Governor appointed a committee to estimate the present and future accommodation required for the restraint of persons suffering from mental diseases and to submit recommendations with plans of buildings, staff requirements, etc. The committee has not yet submitted a report but has been busy collecting data on which to form conclusions. Members of the committee have visited and reported on mental hospitals in Kenya Colony and in the Union of South Africa.

10. A hospital, equipped to accommodate eight patients, was built at Lilongwe from monies subscribed by friends and admirers of the late Mr. Dharap, M.B.E., a member of the Asiatic community. This hospital was presented to Government and will serve the Asiatics living in the Northern Province.

11. A number of Jewish refugees from Central European countries arrived in Nyasaland towards the end of the year and have been accommodated in a special camp. Provision was also made during the year to accommodate Italian Nationals, but they have not yet arrived.

12. The Nutrition Unit continued work in the Kota Kota district, but not without vicissitudes. The reduced team approved in 1940 was completed for the first time early in the year by the appointment of an Agricultural Supervisor, who took up residence in the Highlands a few miles from the headquarters of the original Nutrition Survey Team. A bad agricultural season hampered his efforts to introduce new food crops and he found himself, from the start, involved in measures for the growing of staple food to stave off hunger. The District Commissioner, who is Chairman of the Unit, was changed during the year. The new Chairman has shown considerable enthusiasm in the work of the Unit, but change of personnel in a team of this nature does slow down progress, at least for a time.

13. After two years of work as the medical member of the Unit, the Medical Officer, Kota Kota, states that he found that only about one per cent. of the people of the area evinced a desire to better themselves coupled with the will to make the sustained effort necessary to accomplish such benefit. If progress is to be made this small minority has to be encouraged, for only through them

can the remainder be taught. The progressive element has to-day a difficult time for it has to combat the opposition of the large conservative mass whose opposition occasionally takes unpleasantly concrete forms. The small progressive element can in time be expected to influence a larger group of moderately intelligent people, who could be industrious but who to-day are afraid of the criticism of the mass. There is, however, hope for them, but progress amongst them will not be rapid. How to affect the mass remains at present an almost insoluble problem ; if they are to be taught improved methods of agriculture and ways of life in the immediate future, some form of compulsion appears necessary.

14. During the year the medical member of the Unit continued the work of observing conditions of health in the area covered by the Unit and in view of the extreme interest of the work he has done a record is included as an appendix to this report. The area of country covered by the report includes part of the Highlands, a foot-hill area, and a section of the Lake Shore.

15. The Nutritional Investigator continued her observations on children, but found it difficult to make progress in diet improvement owing to the poor harvest.

16. The Assistant District Officer continued his observations on fishing. In spite of enthusiastic efforts he has been able to interest few fishermen in new methods of fishing, boat building, and mechanical processes in string and net making.

17. An Inter-territorial Conference was held at Zobwe in Portuguese East Africa to consider the risks of infection with trypanosomiasis of persons passing through the Tete Province of that territory. The Conference was attended by representatives of Portuguese East Africa, Northern Rhodesia, Southern Rhodesia and Nyasaland. Nyasaland was represented by the Labour Commissioner and the Director of Medical Services. The Conference came to the conclusion that a definite risk of infection existed, but that, on the evidence, it was impossible to say whether the risk had grown greater in recent years. The Conference, however, recommended certain precautions which the various Governments might take. The findings of the Conference were referred to a Conference of Governors sitting in Salisbury, and are to be given further consideration in the future.

18. Mr. W. Millar, an Anti-Malarial Engineer of experience, joined the staff of the Medical Department on 13th July, 1941. He has been engaged for a period of three years and is undertaking a survey of township areas with a view to preparing anti-malarial drainage schemes for reducing the incidence of malaria in those areas.

B. GENERAL DISEASES.

19. During the year 393 patients were treated in Government European Hospitals and 20,008 in Government African Hospitals. The figures for 1940 were 378 and 15,214 respectively.

20. 1,902 Europeans and 169,034 Africans were treated as out-patients at Government Hospitals. The corresponding figures for 1940 were 1,404 and 153,384 respectively.

21. 587,790 Africans were treated at Government rural dispensaries. The figure in 1940 was 405,805. The standard of treatment given at dispensaries with the availability of better trained dressers is steadily improving. A few of the dressers can now be trusted to give intravenous injections in the routine treatment of bilharzia and syphilis.

22. The Dutch Reformed Church Mission maintained four main hospital centres during the year and treated 3,889 in-patients and 21,187 out-patients. The Church of Scotland Mission, Blantyre, continued to undertake the maintenance of the only African and Asiatic hospitals in that district and during the year admitted to their African hospital 707 patients sent in by the Government Medical Staff. 162 Asiatics received hospital treatment at their Asiatic hospital. The Seventh Day Adventist Mission at Malamulo admitted 90 Europeans and 426 Africans into their hospitals.

23. Malaria and amoebic dysentery continued to be the commonest diseases recorded amongst Europeans. Twelve Europeans were operated on fo appendicitis in Government hospitals and nineteen at the Seventh Day Adventist Mission Hospital.

24. Ulcers are the commonest cause of Africans being admitted to hospital the next most frequent causes being hookworm infections, malaria, and venereal diseases especially syphilis. Amongst patients receiving out-doo treatment these diseases are common, as are also bronchitis and conjunctivitis

C. COMMUNICABLE DISEASES.

Small-Pox.

25. Six cases of small-pox were reported with no deaths; three occurre in the Mlanje district, two in the Cholo district and one in Dowa district. Th resident population is now fairly well vaccinated, but contact across ou boundaries is easy and it is impossible to prevent infected persons entering th country. Government has approved of the local manufacture of lymph an arrangements have been made to start making our own supplies on the receip of the apparatus ordered. In the meantime supplies of lymph are obtained from the Tanganyika Territory. The number of persons vaccinated during the yea was 111,926.

Cerebro-Spinal-Meningitis.

26. Cerebro-spinal-meningitis continues to be endemic throughout th greater part of the Protectorate. 244 cases were reported during the year; th figure last year was 247. Deaths caused by this disease, however, were much fewer than in 1940, the number being 47 as compared with 77. A larg proportion of the deaths were in cases reported too late to receive skille help, Of the cases reported this year, 104 occurred in the Chikwawa distric and 42 in the Ncheu district. The cases reported from European settle areas in the Southern Province were very much fewer than in recent years an it is believed that this is due to the improved housing for labourers now bein provided on estates.

Tuberculosis.

27. The number of persons reported anually to be suffering from tuberculosis is steadily rising. This may be due to the increased confidence of the African in treatment available at Government and Mission hospitals. The pulmonary form of the disease is the commonest, but bone and gland infections are not rare. Tuberculosis in cattle is not common and milk is not regularly consumed except in very few districts. 248 cases were treated in Government hospitals, of which 154 were pulmonary infections.

Trypanosomiasis.

28. Thirteen cases of trypanosomiasis were reported during the year with one death ; eight of the cases occurred in the Kota Kota district, and five in the South Nyasa district. The number of cases reported is greater than in recent years and the increase is believed to be due to the spread of the population into the fringe of known tsetse infested areas in search of land suitable for cultivation. The position is being kept under observation.

Tropical Typhus.

29. Two cases of tropical typhus, both in Europeans, were reported from Zomba. The Medical Officer dealing with these cases suggests infection was associated with dog ticks of the Dermacentor genus.

Yellow Fever.

30. Nyasaland is not yet on the route of any regular air service from countries known to be, or suspected of being, infected with yellow fever. Connection by air is made by a feeder service flying between Salisbury in Southern Rhodesia and Fort Jameson in Northern Rhodesia. To protect the country, Government, by proclamation, is prohibiting the entry into this country of anyone who has been in any suspected territory within a fortnight of arrival here unless previously protected, within prescribed periods, by inoculation against the disease. Aeroplanes arriving in the country must make their first landing at one of two aerodromes, Chileka or Lilongwe. All persons working at, or resident near, aerodromes are being inoculated against yellow fever and planes on first arrival at the aerodromes will be inspected and disinfected. Routine measures against *Aedes aegypti* are being taken around aerodromes and in townships.

Malaria.

31. No part of the country is free from malaria. In the low lying areas infection apparently occurs throughout the year and the population develops, in time, a considerable immunity. In the foot-hills and highland areas there are definite epidemic seasons following the rains, and immunity does not develop so rapidly with the result that sickness may interfere with the planting season. 23.4 per cent. of Europeans admitted to Government hospitals suffered from malaria. A large proportion of this population takes quinine regularly as a prophylactic.

Leprosy.

32. At the close of the year there were 832 lepers, of which 579 wer males and 253 were females, in residence at leper institutions maintaine by missions with Government assistance. 60 males and 52 females wer receiving out-patient treatment at these centres. Government hospital treated 155 males and 74 females also as out-patients and a number wer under regular supervision at rural dispensaries.

Helminthic Diseases.

33. 1,788 persons were treated at Government African hospitals fo ankylostomiasis and 859 for schistosomiasis. In those parts of the countr that fringe Lake Nyasa and the River Shire it is not rare to see persons wit all the symptoms caused by a severe hook-worm infection.

Venereal Diseases.

34. 1,531 persons were admitted into Government hospitals with syphili and 459 with gonorrhoea. The number of patients treated at these hospital as out-patients was:—syphilis, males 1,779, females 1,553; gonorrhoea, males 651 females 268. Whether, as the figures appear to indicate, gonorrhoea is stil comparatively the rarer venereal disease in this country is difficult to prove for it is reported that those infected still seek treatment from practitioners i native medicines. The more regular use of M. and B. 693 in the treatment o the disease at Government hospitals, may in time bring infected persons i larger numbers to those institutions.

D. VITAL STATISTICS.

General African Population.

35. The Registration of Births and Deaths amongst Africans is not ye attempted.

The rates given below are compiled from records kept by Africa enumerators working under the direction of Officers of the Medical Department

Area and District.	Estimated population under observation.	Birth rates per 1,000 of population.	Death rates per 1,000 of population.
Fort Manning ...	34,070 ...	49.6 ...	21.1
N.A. Tengani's Area (Lower Shire)	19,400 ...	52.8 ...	33.6
5 miles radius Karonga Township (N. Nyasa) ...	4,669 ...	39.83 ...	31.05
4 N.A. areas (Chikwawa)	11,813 ...	65.5 ...	23.7

Europeans and Asiatics.

36. Mainly owing to war conditions, the statistics of European and Asiati populations are not yet available.

37. 230 European officials were resident in the country during the year and 4 were placed on the sick list. The average number off duty on any one day as 3.74. No deaths occurred amongst officers.

38. The Witwatersrand Native Labour Association recruits labourers rom Nyasaland for work at the Rand Mines in South Africa. They naintain their own doctor who examines and passes labourers seeking mployment. The standard of fitness required is high and special attention is iven to the condition of the lungs. Local Africans of poor physique have egun to learn that to apply for recruitment by the Witwatersrand Native abour Association is of little use. The Medical Officer maintained by V.N.L.A. advises that of 10,661 natives examined he passed 9,548 as fit for work n the Rand.

39. Army Medical Officers stationed at Zomba were responsible, during the ear, for the medical examination of recruits for the Army. All men offering for nlistment were volunteers. Of 1,846 men examined 672, or 36 per cent., were ejected as unfit. Of those rejected 40 per cent. were classified as of poor hysique and 23 per cent. as suffering from defective vision. Glasses are not rovided for African Army recruits.

40. At the end of 1941 it is estimated that 108,000 Nyasaland male natives re in employment in adjacent territories. The annual exodus is great, but umbers also return. The following figures give some idea of what happens ach year.

	Estimated number resident at end of 1941.	Estimated number leaving Nyasaland in 1941.	Estimated number returning to Nyasaland in 1941.
outh Africa	29,000	19,792	20,992
outhern Rhodesia	73,000	27,042	24,045
orthern Rhodesia	4,500	1,561	1,300
anganyika Territory	1,500	455	435
Total	108,000	48,850	46,772

II. HYGIENE AND SANITATION.

abour Conditions.

41. Local employees have, during recent years, shown a fuller appreciation of he fact that it pays to house labour satisfactorily. Housing conditions are teadily improving and an increasing percentage of labourers on many estates an now be considered to be satisfactorily housed. Government has also nade a beginning in improving the houses of Government employees, but there s much leeway to be made up. During the year a small settlement was built y Government at Zomba for the housing of Government clerks.

42. Government is giving a lead in the matter of a minimum wage and has aised this amongst Government employees to 12/- a month. The increased ages should permit of a better standard of living being maintained,

but whether the increased funds will be used on food is doubtful, for the local African has reached a stage in his development, in which clothing of a showy character has a strong fascination for him. The inability to purchase clothing easily, owing to war conditions, may help to counteract this fascination.

Schools.

43. In 1939, when the School Building Rules were approved, it was agreed that school managers would be given a period of two years during which they could bring existing school buildings into conformity with the Rules. In spite of difficulties created by the war many schools have completed their improvements and others are taking steps to do what is necessary. There are still no organised medical inspections of schools, but many schools were regularly visited by members of the medical staff, students being examined and treated as required.

Townships.

44. The Health Inspectors at Blantyre and Zomba maintained routine control of sanitary services in those towns. The former was also in supervisory charge of services in Limbe. In other towns Medical Officers assisted District Officers in maintaining routine services.

Rural Areas.

45. Steady progress is reported from most districts and a few Native Authorities are said to be showing a decided interest in the layout of villages, improved housing, and in the provision of latrines. Native Authorities who have attended the course of training at the Jeanes School are showing that the training they are given there is of value.

III. SPECIAL SERVICES.

(A) *Maternity and Child Welfare.*

46. Little progress has been made in Maternity and Child Welfare work at Government medical centres outside Zomba, Lilongwe and the Jeanes School. European Nursing Sisters are necessary for starting this work in districts. Later, no doubt, expansion could be made by the use of trained African midwives.

47. The Church of Scotland Mission maintains Nursing Sisters at Blantyre, Mlanje, Livingstonia, Loudon, Ekwendeni, Bandawe and Karonga. All those mission centres are developing village services to a large extent with locally trained women, not all qualified as midwives. The Dutch Reformed Church Mission has Child Welfare Centres and Maternity hospitals at Mkhoma, Mlanda, Malingunde and Mvera, and during the year dealt with 667 labours. This mission is also developing a village service around the mission stations. The Universities Mission to Central Africa maintains Maternity and Child Welfare centres at Kota Kota, Mponda and Likoma. The White Fathers' Mission has continued to develop the Maternity Centre opened last year at Ntakataka and has started similar work at Likuni.

(B) *Hospitals, Dispensaries, Laboratories, etc.*

48. The opening of the Dharap Memorial Hospital at Lilongwe has already been reported. Temporary extensions were made during the year to the Government hospitals at Liwonde and Ncheu. The Dutch Reformed Church Mission made an extension to the Maternity hospital at Malingunde and have rebuilt or rehoused the hospitals at Mkhoma and Mlanda.

49. Requests for new dispensaries in Native Authority areas, not provided with such institutions, were frequent during the year, but no further dispensaries were approved as trained staff available is limited and it is considered desirable that existing units should be served efficiently before further expansion is attempted.

50. The Venereal diseases clinics at Zomba and Blantyre were maintained and special attention was given to the treatment of these diseases in district hospitals.

51. The Medical Laboratory functioned throughout the year and undertook the examination of 11,862 specimens of various kinds sent in from Government medical centres, missions, police stations, etc. In addition, ten autopsies were made on magistrates orders. In the absence of an Analyst, the Pathologist undertook work usually dealt with by such an officer.

(C) *Training of Medical and Health Personnel.*

52. During the year the Church of Scotland Mission at Blantyre discontinued its training of midwives, mainly owing to lack of teaching staff. The Dutch Reformed Church Mission training school at Mlanda was similarly affected, for Dr. Pauline Murray, M.B.E., served Government for a time and later went to the help of the Church of Scotland Mission at Blantyre. She has since married and retired from active medical work. Her resignation will be a loss to the country as a whole, for Dr. Murray has been a great power in local medical activities for a number of years.

53. Towards the end of the year the local Council of the Church of Scotland Mission in Blantyre gave notice that they proposed to close their teaching school for Hospital Assistants at the end of 1941. This became necessary owing to financial difficulties and to the lack of teaching staff. Arrangements have been made for the transfer of the students in training at the Mission School to the Government Training School at Zomba. The medical staff of the Blantyre Mission have been pioneers in the training of Africans for medical work, and persons trained at their school can be found working in hospitals and dispensaries not only in this country but in the Rhodesias, Tanganyika Territory and South Africa, where they have gained a reputation for efficiency and trustworthiness. Consequently the responsibilities of Government are now increased.

54. The Nyasaland Medical Council conducts examinations for Hospital Assistants and Midwives. The examinations are held twice a year. Two students who were trained at the Government School passed out as Hospital Assistants: four from Blantyre Mission School passed all subjects except Midwifery. Two Government School students and two from Blantyre Mission

completed Part I of the course. Three African women from the Government School and two from the Blantyre Mission qualified as Midwives. The Government Training School also undertakes the training of male dressers, and seventeen were posted to district hospitals during the year.

55. A short course of training for Sanitary Assistants was conducted by the Health Inspector at Zomba. The course was very elementary in character, but it is hoped that before many years pass we shall have a training school for Sanitary Inspectors with a standard on the preventive side equal to that achieved on the curative.

IV. FINANCE.

56. The Medical Department expended £60,094 during the year of which £1,665 was voted to Township Councils and Sanitary Boards for the maintenance of routine sanitary services.

H. S. DE BOER,
Director of Medical Services.

Diseases	European In-patients at Government Hospitals		African In-patients at Government Hospitals		African Out-patients at Government Hospitals and Dispensaries
	Cases	Deaths	Cases	Deaths	Cases
I. Infectious and Parasitic Diseases ...	145	2	7,740	90	82,875
II. Cancer and other Tumours ...	4	1	166	9	315
III. Rheumatism, Diseases of Nutrition and of Endocrine Glands and other General Diseases	2	—	135	3	4,693
IV. Diseases of the blood, and blood forming organs ...	1	—	61	4	585
V. Chronic Poisoning ...	3	—	4	—	3
VI. Diseases of the Nervous system and sense organs ...	6	—	1,103	13	63,755
VII. Diseases of the Circulatory system ...	7	1	113	7	654
VIII. Diseases of the Respiratory system ...	24	1	1,019	41	93,685
IX. Diseases of the Digestive system ...	80	3	1,103	26	98,638
X. Non-Venereal Diseases of the Genito-Urinary system ...	27	—	426	15	1,135
XI. Diseases of Pregnancy, Childbirth and the Puerperal state ...	34	—	353	12	422
XII. Diseases of Skin and Cellular Tissue XIII. Diseases of Bones and Organs of Locomotion	32	—	4,593	7	121,320
XIV. Congenital Malformation. XV. Diseases of Early Infancy ...	1	1	24	2	32
XVI. Old Age ...	–	—	4	3	29
XVII. Violence, External causes ...	18	—	2,627	48	100,539
XVIII. Ill defined diseases ...	9	—	538	9	19,110
TOTAL ...	393	9	20,008	289	587,790

DR. W. T. C. BERRY'S REPORT OF WORK DONE AS A MEMBER OF THE NUTRITION UNIT.

Parasitic disease plays little part in the ill-health of people in N.A Jere' area (Highlands) save for seasonal mild malaria. The climate is non-tropica and, at times, bitterly cold.

Pneumonia and bronchitis are distressingly common. No nursing facilities exist for the former, though some cases have been treated by chemotherap in their homes. Treatment of bronchitis is at best unsatisfactory. Th common operative predisposing factors of both are (1) seasonal semi-starvation (2) lack of protection from the rain, (3) smoke in the house, (4) exhaustion Often all operate at once. Having put off agricultural work till the last possibl moment a man will have to work long hours in the pelting rain. Exhausted his hunger barely assuaged, he sleeps in sodden clothes in a smokey hut. Th state of seasonal semi-starvation in which the community exists is receiving th attention of the agriculturist. Miss Barker has been experimenting, to dat without much success, in simple forms of macintosh. It is possible to design simple chimney but difficult, without the use of metal, to devise a fireplac upon which the vigorous stirring of native porridge can be performed. Experiments that I have made only suggest that cooking must be done in a separat kitchen, and a fireplace with a chimney be built in the living hut. This is fo the intelligent, and is of use only in those areas that are cold enough to make fire desirable.

The disease next in importance in the area is Vincent's angina, mainl affecting the gums. Soon after weaning, children often exhibit traces of bloo on pressure of the gums. Quite severe bleeding may occur. In the next fe years successive attacks recur and at the age of 6--10, in well marked cases there is gross destruction of the gum margin and a state of chronic inflammation Vincent's organisms can be demonstrated even in the earliest stages. Toward puberty, inflammation supercedes bleeding, and in adult life the latter i uncommon, though a fearful state of pyorrhea and gingivitis often exists an teeth are lost. In old age the condition may become worse still. A few displaced teeth, almost hidden in chunks of tartar, joggle about in loose socket from which pus wells. Fetor oris, in childhood an invariable feature, late becomes formidable. In childhood cancrum oris may end the story. Failin this portions of the jawbone may separate. Soft tartar is commonly deposite on the teeth. In its milder form the disease may affect the gum of one or tw teeth only. Pain in uncomplicated cases is not a marked feature but the affec on the system must be considerable.

A survey of all ages in Kota Kota district, and of male adults in Zomba prison provided me with the main clinical features of the disease and satisfied me tha the basic cause of the pyorrhea of adults was the same as that of bleeding i children.

Two groups of children were assembled. One, in the foothills, lived on staple of maize, with the common vegetable side dishes, of which there was ar abundance during and after the rains, and a shortage later. The other, o the Lake Shore, was known (thanks to the work of the Nutrition Survey of 1939) to have a diet low in protective foodstuffs generally throughout the year save during the mango season, when massive doses of certain vitamins were taken in.

The gums of these children were examined at approximately fortnightly intervals throughout the year; despite occasional absenteeism due to the habit that families have of moving for a month or more, to stay with relatives, seek work, etc., sufficient material was obtained to show the following points.

1. In both groups, surprisingly few (less than 10%) children went through a year without showing some transient affection—bulging rosy gums, or a trace of blood on pressure—though it might be observed on one occasion only. These transient affections showed no marked seasonal incidence; some indeed occurred at the height of the mango season in the Lake shore village.

2. Children who were badly affected did not clear up; though they might for a month or two show marked improvement, they relapsed. Rather more seemed to improve during the mango season than at other times.

3. Upon bulking the figures there was apparent a slight seasonal incidence in each group. The Lake shore children were better during the height of the mango season. The foothill group were better during the rains. The improvement was, however, only in the region of 10% (by an arbitrary system of marking), the main mass of badly affected children remained unaltered, and some cases became worse or began for the first time in the rains.

In assessing the degree of affection, bleeding and gingivitis were not differentiated. It is proposed during the coming year to keep records tooth by tooth, of the front teeth, in respect of both features of the disease. It is hoped that more definite information will thus be obtained. Nevertheless studies to date show quite definitely that the marked seasonal changes in availability of certain foodstuffs are not reflected to anything like the same degree by changes in the incidence and severity of the disease.

Experiments on cases of the disease.

(*a*) A child aged about 12 was given injections of 0.3, 0.2, 0.2, 0.3, grammes N.A.B. intravenously at intervals during 14 days. Marked improvement was followed by rapid relapse.

(*b*) Two children were fed on 100 gm. of ripe Cape Gooseberries, daily for 30 days. The vitamin C content was not determined. No improvement either in bleeding or gingivitis resulted, either absolute or in comparison with controls. (Date: Oct. 1940. Place: N.A. Jere's village).

(*c*) Five children were fed on 20 oz. daily of pawpaw juice. The Nutritional Investigator assessed the juice as having a C content of 88 mgm. per 100 c.c. Allowing for a certain loss in the mile or so of carrier transport, the daily dose is unlikely to have been less than 300 mgm. In a period of 49 days, the children attended 48, 47, 39, 37 and 28 days. At the end of the period there was no improvement in comparison with controls. (Date: May/June/July 1941. Place: Malenga).

(*d*) Four children (one had previously had 28 days of pawpaw juice) were fed on 60 mgm. nicotinic acid daily. In a period of 36 days, they attended 36, 34, 32 and 27 days respectively. At the end no improvement was seen over controls. (Date: Aug./Sept. 1941. Place: Malenga).

(*e*) Four children, (three had previously had pawpaw juice) were given 300 mgm. ascorbic acid daily. In a period of 22 days they attended 22, 20, 19 and 17 days respectively. Results were again negative. (Date Aug./Sept. 1941. Place: Malenga).

These were the immediate results. Groups (*c*), (*d*), (*e*) and controls were followed up during the ensuing months. From the end of October to December they all have had (and will go on having in January) a dose, at first small, later rising to saturation, of vitamins A and C (and possibly of B components; I have no data in the form of mangoes). Results at the end of December are:—

Pawpaw plus ascorbic acid plus mango.

1. Marked improvement. No bleeding, some swelling and redness.

2. Complete clinical cure, save that the gum over the right lower first premolar (which has become bare and protruding during the course of the disease), still bleeds on pressure.

3. Bleeding has ceased (it was mild). Residual gingivitis may or may not be due to the presence of tartar.

Pawpaw plus nicotinic acid plus mango.

1. Unchanged or rather worse. (1 case).

Pawpaw only plus mango.

1. Definitely worse. (1 case).

Nicotinic acid only plus mango.

1. Slight improvement.
2. Slight improvement.
3. Worse.

Ascorbic acid only plus mango.

1. Slight improvement. Far from cured.

Controls, (mango only).

1. Complete cure.
2. Marked improvement.
3. Slight improvement. Bleeding has ceased. Gingivitis is still marked
4. Worse.

It will be seen that with the exception of the ascorbic *plus pawpaw* group the controls make a better showing than the treated cases. (They were on the whole milder cases). Results are very indefinite, but indicate that a prolonged (6—7 months) experiment with ascorbic acid as a supplement, might give results. This will be undertaken.

SUMMARY.

1. The seasonal changes in supplies of protective foodstuffs were reflected nly to a slight degree by changes in the incidence and severity of the disease.

2. Feeding with massive doses of vitamin C over comparatively short eriods did not cure the condition. In this the disease differs from classical curvy and from the chronic gingivitis with bleeding described by Campbell and ook (1) in European subjects.

3. Feeding over a short period with large doses of nicotinic acid did not ure the disease. This does not confirm the report by King, L.V. (2) of cure of incent's angina with nicotinic acid.

4. A slight but insignificant improvement over controls of a group which ceived successive interrupted doses of vitamin C over a period of 7 months, ggests the desirability of trying out a feeding experiment with vitamin C over period of 6 or 7 months.

TROPICAL ULCER.

Whilst illness from leg ulcer is less widespread in N.A. Jere's area than in e warmer parts of this district, it is nevertheless an unpleasant sequel to rasions and burns. Many authors attribute the disease to defects in the diet, t no single factor has been incriminated.

The two groups of children whose gums were observed were also used for servation of the incidence of ulcer; the abrasions upon their legs, were, ithin certain limits of mildness or severity, recorded week by week, no dressings ere applied, and the time taken for each to heal or to progress to ulceration as noted. For the sake of space it is not proposed to give details here. ints of interest are :—

1. *Figures for the year of observation.*

	Duration of abrasion in weeks before healing														Total No. abras-ions.
	1	2	3	4	5	6	7	8	9	10	11	12	over 12	Ulcer.	
llage "A"	222	171	96	55	36	9	6	13	8	4	2	4	3	6	635
llage "B"	134	102	51	62	24	21	11	6	2	3	0	2	3	0	421
Percentage															
llage "A"	34.97	26.93	15.12	8 66	5.67	1.42	.94	2.05	1.26	.63	.32	.63	.47	.93	100
llage "B"	31.83	24.23	12.11	14.73	5.70	4.99	2.61	1.43	.48	.71	0	.48	.71	0	100

2. It will be seen that in the foothill village, "A", some abrasions larged progressively to become ulcers. An abrasion was not considered to ve developed into an ulcer until the surface area of the sore was equivalent that of a Southern Rhodesian penny ($3\frac{1}{2}$ square centimetres approx.).

3. In the Lake shore village, "B", no ulcers were observed.

4. At "A", certain abrasions enlarged somewhat, but not to the point at which they would be defined as ulcers; they then remained stationary, and then healed slowly, the process taking up to 14 weeks. During the majority of weeks when this was going on, a copious yield of pus could be obtained from beneath the scab. Such abrasions will be referred to below as sluggish sores. They were, in effect, miniature ulcers in which a balance was struck between parasite and host at a level below that at which an ulcer was defined as having developed.

5. At "B" no ulcers occurred. Two sluggish sores in one child and one in another, were observed. The pus, however, was free from the fusiform bacillus, (see para. 8). Had they been infected with this organism it is possible that they might have progressed to true ulceration.

6. Each week an endeavour was made to express pus from every abrasion by gentle pressure with a glass slide. Smears so obtained were examined microscopically. The vast majority showed cocci of various types as the only organisms present in any number. Others, at "A", showed, in addition, fusiform bacilli.

7. All ulcers showed fusiform bacilli, as well as cocci. None showed spirochaetes, though these were easily demonstrated in more advanced ulcers from neighbouring villages. The fact that the bacillus alone can produce invasion is of interest in connection with the very doubtful efficacy of arsenicals in the treatment of ulcer.

8. All sluggish sores at "A" showed fusiform bacilli. At "B", 8 cases showed such bacilli, but they were short stumpy palely staining forms, and disappeared after a week or two. The abrasions were 'unhealthy' looking, but did not amount to sluggish sores.

9. True ulcers were seen in some, though not many, children in the villages around village "B". One ulcer has since been seen among the children of the observation group. It is considered that "B" is not immune to ulcer, though it appears to enjoy a relatively greater immunity than at "A", where, incidentally there is a considerably greater degree of immunity than in certain other parts of this district.

10. In consecutive series of 320 abrasions at "A", and 213 abrasions at "B" from which pus smears were taken when possible, a greater percentage were dry throughout at "B", whilst at "A" a greater number yielded pus on more than one occasion. The numbers and percentages of abrasions in which the wound was dry on all occasions and the number in which a smear was obtained in one, two and three or more of the weekly examinations, is given below.

Village "A".	Total 320	Dry throughout 145	1 swab 84	2 swabs 42	3 or more swabs 49
Village "B".	,, 213	,, ,, 139	,, 38	,, 20	,, ,, 16
%figs. "A"	,, 100	,, ,, 45.3	,, 26.3	,, 13.1	,, ,, 15.3
"B"	,, 100	,, ,, 65.3	,, 17.8	,, 9.4	,, ,, 7.5

The impression of an increased tendency at "A", to septic infection of abrasions and to persistence of such sepsis, was confirmed clinically.

11. Despite the great seasonal variations in availability of different foodstuffs, there was no season of freedom from ulcer. A slight tendency towards ncreased numbers of sluggish sores at "A" was observed during the early months of rains. It was thought that this was due to mechanical factors, viz. the rain washes off the protective scabs from abrasions; there are greater numbers of flies, which appear, by their persistent return to abrasions to feed, to be a potent factor in the mechanical transmission of the specific organisms from case to case. An increased incidence of malaria, and debility due to food shortage, were thought also to contribute.

12. There was no correlation to be observed between susceptibility to ulcer and exhibition of either follicular keratosis or bleeding gums, either in the ndividual or in the group.

12. Hookworm and bilharzia were far more widespread and severe at "B" than at "A". Though parasitic disease may well aggravate susceptibility to ulcer, it does not seem to be the principal causative factor.

DISCUSSION.

The main conclusion reached was that because physical factors were dissimilar in the two groups, it was not possible to attribute the comparative immunity of Village "B" to diet alone.

If it proves practicable to supplement the diet of a sufficiently large group of children, for long enough, with foods containing an adequate quantity of any one factor which is lacking, then it should be possible, by observation of the behaviour of abrasions in the manner described above, to form some estimate of the value of such a factor in the prevention of ulcer. A control series is an essential condition.

In the choice of a supplement, one must be influenced by the findings of other observers. The single factor which most workers note as deficient in prone communities and adequate in immune groups, is protein. In the majority of instances of the latter, some animal protein is included in the diet.

In view of its availability (in the larger game of the district) and of its palatability, animal protein has been selected as the first supplement to a group of 47 children, (which by absenteeism will probably be reduced to 40 in time). Supplementation of the diet of these children with biltong and with native cured meat has begun.

THE SEASONAL INCIDENCE OF CERTAIN MINOR SIGNS OF FOOD DEFICIENCY.

A criticism of his own survey, voiced by Dr. B. S. Platt, was that whilst the seasonal variations in supply of dietary factors were recorded, the complementary investigation, the observation of the change from season to season of the known minor signs of dietary deficiency, was not carried out.

My two groups of children corresponded closely in their diet to the villages of Biwi and Kasamba of the 1939 survey. The incidence of follicular keratosis, (of which three cases were cured in from 2 to 4 months by administration of vitamin A, whilst two comparable controls were not improved) was recorded.

Percentage figures from season to season are available if it is thought that they would be of assistance in the compilation of the Survey report. In the main, the trend follows, with a lag of a month or two, the supply in the diet. The children of the Lake shore show marked improvement after the mango season, an improvement which only begins to wane in October-November, follicular keratosis reaching a peak in January. Throughout the year they are far better off in this respect than the foothill children. The latter improve during the rains, but the degree and prevalence of the sign is far greater than one would expect from the considerable supplies of carotene in their diet.

Towards the end of the dry season a soggy grey condition of the mucosa at the angles of the mouth occurred in a small number of children in both groups, more in the foothills (3.9%). A further 26.0% showed for brief periods very faint indefinite lesions similar in character than on the Lake shore (1.5%). It cleared up during the rains. I have not carried out any experiments to demonstrate the cause owing to shortage of material. I will endeavour to do so.

The seasonal incidence of bleeding gums and gingivitis has been described above.

CONCLUSION.

A doctor in the highlands of Jere's area works in a peculiar state of frustration. He sees the people physically below par, but cannot devise any means of assisting the community as a whole.

Helminthic disease is responsible for very little ill health, because apart from the cold climate, communities are small and situated among steep hills. As the Unit work approaches warmer parts of the area, the incidence of illness due to hookworm increases; this will require attention. Whilst the intelligent few take readily to the use of a latrine, prospects of success among the mass are small. A most energetic and enthusiastic medical officer who worked here before me expressed the opinion that progress achieved in sanitation was invariably transient unless it was followed up by continual supervision. Most of all I dislike the slovenly, ill-kept latrine which I think, (perhaps wrongly) breeds more flies and contributes more to the spread of amoebic dysentery than would its contents were they scattered about the bush and exposed to sun and rain. I feel, however, that where hookworm disease is severe, *any* kind of latrine, if used, is better than none.

Chest disease, as I have shown, is a sociological problem. So also is the prevention of deformed feet and missing toes in children, which are due to the chiggers which parents, having a distaste for causing their children pain, cannot bring themselves to remove. Nor incidentally can they summon up enough energy in unison to keep the parasite down by sweeping round their houses, though some villages are better than others in this respect. One cannot badger *all* the people in *all* the villages *all* the time.

The two obvious and important diseases that remain are gum disease and tropical ulcer. The underlying causes of both are unknown. If a dietetic cause can be demonstrated, prospects of better health in the Unit area are considerably improved.